FHI's 2005 Corridors of Hope in Southern Africa: HIV Prevention Needs and Opportunities in Four Border Towns

Zambia's HIV Epidemic

The 1998 antenatal survey found HIV prevalence rates of 27 percent in Zambia's major cities. As in Zimbabwe, rates are very high along major highways and in trading centers and border, plantation and mining towns. The 1998 survey reported rates of 31 percent in the border town of Livingstone and 27 percent in the border town of Chipata, the trading town of Mongu and the highway town of Kabwe.

A Ministry of Health expert group estimated that provincial adult HIV prevalence was 26 percent in Lusaka, 23 percent in the Copperbelt and 19 percent in Northern Province. National adult HIV prevalence is estimated to be 20 percent, which means that more than 1 million adults have HIV. HIV rates are twice as high in urban areas as in rural areas.

Although national prevalence levels are stable, sentinel surveillance results show a downward trend in prevalence among 15- to 19-year-olds, particularly in urban areas. This trend is most notable in Lusaka, where HIV prevalence dropped from 28 percent in 1993 to 15 percent in 1998. Many believe such declines in prevalence probably correspond to reductions in new HIV infections among late teens, and that lower incidence will eventually be reflected in an overall drop in HIV prevalence. Others believe that the data should be interpreted more cautiously until enough time has passed to evaluate the impact of this trend on the epidemic in Zambia.

HIV in Zimbabwe, Zambia and South Africa

Country	Estimated Adult HIV Prevalence	Estimated Adults and Children with HIV
Zimbabwe	26%	1,500,000
Zambia	20%	1,009,000
South Africa	23%	5,000,000

Sources: National AIDS Control Program, Zimbabwe; Ministry of Health/Central Board of Health, Zambia; National Department of Health, South Africa

Sociodemographic Impact

The research team examined the impact of HIV/AIDS on various sociodemographic factors in the three countries. These factors included mortality, life expectancy, population and orphanhood.

AIDS is projected to increase infant mortality up to twofold and child mortality up to threefold, erasing gains made over 50 years in child survival. The declines in infant and child survival will be steepest in Zimbabwe, where health advances had been greatest.

Among adults ages 15 to 49, mortality is expected to triple from levels already eight times higher than those of Western countries. AIDS accounts for 60 percent to 80 percent of deaths among adults in this age group in Zimbabwe and Zambia. The effect of AIDS on adult mortality is currently less pronounced in South Africa's more recent epidemic. By 2010, however, at least 4 million South Africans, 1.5 million Zimbabweans and 800,000 Zambians will have died of AIDS.

AIDS has already had a dramatic effect on life expectancy in the three countries. By 2010, life expectancy will be lower than it was in 1950.

Life expectancy in Zimbabwe, Zambia and South Africa (years)

Country	Life Expectancy		
	1990	1995	2010
Zimbabwe	56	48	40
Zambia	50	42	33
South Africa	63	57	48

Source: U.S. Bureau of the Census

Because many women have children before they develop AIDS, the epidemic's effect on population growth is attenuated. In Zambia, where mortality is offset by high fertility, population growth may slow from 3 percent to about 1 percent by 2010. Zimbabwe and South Africa (and Botswana and Swaziland) -- countries in which exceptionally high prevalence coincides with lower fertility -- may see actual declines in population by 2010.

AIDS also affects population structure. It distorts the population pyramid, removing adults of sexually active age, and leaving children and the elderly. This will increase the already high dependency ratio from 48 percent to 60 percent.

If the 1980s were the decade of HIV and the 1990s the decade of AIDS, the 2000s will be an era of orphans (defined as children younger than 15 who have lost a mother or both parents). More than 90 percent of the estimated 10 million children orphaned by AIDS live in sub-Saharan Africa. In Zimbabwe, Zambia and South Africa, 20 percent to 30 percent of all children younger than 15 may be orphans by 2010.

Barriers to Behavior Change

Despite the efforts of national governments and NGOs, southern African populations have been slow to adopt safer sex practices. The reasons for this lack of success in changing behavior are complex, but some of the contributing factors include male migration, conservative cultures, gender and the prevalence of violence.

Mining and agriculture make up a substantial part of the economies of South Africa, Zimbabwe and Zambia. These industries rely heavily on migrant labor from within the three countries, as well as from other neighboring countries. It has been well established that men living away from their families and their home communities are more likely to have multiple sex partners.

Among migrant workers, one is often confronted with a certain fatalism about contracting AIDS. It is considered a distant threat compared to the dangers they face in some of their jobs or in neighborhoods where death from gang violence is a more immediate concern.

In many of the southern African cultures, women are conditioned to be submissive to their male partners and to give them sex when they require it, regardless of whether a condom is used. This is particularly true for the partners of returning migrant laborers. These women are not empowered to demand condom use from their partners, who are most likely at risk of HIV and others STIs. Also, because educational and economic opportunities for women are more limited, more women resort to commercial sex work for their economic survival.

On the other hand, most southern African cultures are pronatalist and very conservative about sex, which discourages open discussion about sex and sexuality. In this context, changing sexual practices is particularly difficult.

Access to Condoms

While behavior change is the most significant part of the problem in preventing HIV transmission, basic condom availability is still an issue along some parts of the transport corridor. The national departments of health procure millions of condoms, but distribution of these condoms to local health departments is extremely inefficient, leading to large over-stocks in some areas and shortages in others. Since distribution points for the condoms are limited to the public health infrastructure, it is particularly difficult for the mobile high-risk-behavior groups to obtain them. Condom social marketing could fill that gap by making condoms available through both formal and informal outlets accessible to the target populations along the transport corridor. For example, 24-hour service stations are the most obvious outlets, since many provide secure overnight truck stops where high-risk sex is often practiced.

During an initial site visit, representatives of the Society of Family Health/South Africa found that traders were generally willing to stock condoms. Some were selling the free supplies that were provided irregularly by the departments of health. Others, although reporting demand, failed to stock any condoms at all, but were keen to do so when supplies were offered. It is clear that both sex workers and truckers congregate at certain key sites and truck stops where there is a great need for condoms and interpersonal interventions advocating their use.

Other issues must be overcome in order to improve condom access. In South Africa, for example, getting product listings for certain retailers -- particularly the petrol station chains -- has proved

complex. Some retailers perceive that there is still a stigma attached to stocking condoms. And in Zimbabwe there are very few outlets at the border posts; penetration of these sites cannot be gained via mass media alone and will require interpersonal communication.

Summary of Regional Assessment

There is growing recognition that interventions for highly HIV vulnerable communities are vital, even in a mature HIV epidemic. The link between mobility and HIV vulnerability is also increasingly recognized, and highways and borders have been identified as environments of elevated HIV vulnerability. For example, prevalence of HIV among antenatal clinic clients at Beitbridge -- southern Africa's major border crossing -- is nearly 50 percent.

Because migration transcends national and international boundaries, HIV/AIDS interventions for mobile populations require a regional approach. Recognizing the importance of regional cooperation, the U.S. Agency for International Development (USAID) and partner governments and organizations initiated the "Corridors of Hope Initiative." This project seeks to promote practical regional collaboration, beginning on the Durban-Lusaka highway, southern Africa's major transport corridor linking South Africa, Zimbabwe and Zambia.

A regional assessment for the Corridors of Hope Initiative sought to develop, test, refine and package a standard assessment methodology that would enable planners to evaluate risk, identify prevention opportunities and develop grounded, coordinated regional prevention initiatives. This assessment was conducted from July to November 1999 at four border sites in three countries: Messina in northern South Africa, Beitbridge in southern Zimbabwe, Chirundu in northern Zimbabwe and Chirundu in southern Zambia.

Members of the seven-person research team began by conducting a literature review of regional sociocultural and epidemiological data from Zambia's Central Board of Health, Zimbabwe's National AIDS Coordination Programme and South Africa's National AIDS Directorate. They also mapped the four sites, producing maps that provide a spatial representation of borders, highways, health and social services, major residential areas, major army and police bases, major employment centers, major truck stops, and sex worker residential areas, guest houses and bars.

Detailed inventory guides were prepared to gather information, including demographic, residential and employment data. Team members used these guides to compile information about the trucking companies using the routes, the average number of trucks crossing and parked overnight at borders, the average duration of border stops, the overall duration of truckers' journeys, and the guest houses, bars and streets patronized by truckers. They obtained similar information about informal traders and sex workers, as well as data on other major economic activities in the four sites. They also collected data on educational institutions and health services, including management of sexually transmitted infection (STI), numbers and categories of STI patients seen, and major impediments to effective STI management.

Ethnographic studies on the sexual context of risk at the border posts focused primarily on migrant men and women, including truckers, sex workers, and male and female traders. The researchers also conducted short behavioral surveys among sex workers in three of the sites: Chirundu and Beitbridge in Zimbabwe and in Messina, South Africa. The surveys focused on STI/HIV knowledge and risk perceptions, relations with steady, casual and commercial sex partners, condom use with each category of partner, and STI symptoms and care seeking.

Findings

Messina, South Africa

Messina has an estimated population of 19,500 to 26,000 residents, two-thirds of whom are female. Situated over 500 kilometers north of Johannesburg in South Africa's Northern Province, Messina is the definitive example of an HIV-vulnerable context. It has an army base to patrol the porous northern border (Africa's "Rio Grande"), copper and diamond mines with migrant mineworkers, and a vast trucking industry. It also has a large sex work industry, which attracts sex workers from the Northern Province -- by far South Africa's poorest province -- and adjacent areas of Mozambique and Zimbabwe. The primary source of local employment is farming, with the large army base, the major mines and informal trading also playing a role. Several thousand truckers cross and sleep at the border each month. Messina has approximately 400 resident sex workers, with about 300 part-time sex workers coming in at peak periods. Members of the local clinic staff have been trained in syndromic management of sexually transmitted infections and receive STI drugs, albeit erratically, but they see few sex workers or truckers. Messina has large private and traditional health sectors. Neither public (government-supplied) nor socially marketed condoms are easily obtainable, except through a targeted peer education project for sex workers managed by the Centre for Positive Care. This nongovernmental organization (NGO) carries out projects with sex workers in the Northern Province towns of Njele, Louis Trichardt, Mutali and Messina with technical support from Oxfam, the Mpumalanga Project Support Association and the University of Zimbabwe and financial support from Oxfam, the Norwegian Agency for Development (NORAD) and the Swedish International Development Agency (SIDA).

Beitbridge, Zimbabwe

Beitbridge town has an estimated population of 20,000 residents. It is situated over 500 kilometers from Harare in Zimbabwe's Matabeleland South Province. The major source of local employment is farming, with customs and immigration, the uniformed services, and formal and informal vending also playing a role. A diamond mine recently closed, increasing unemployment and poverty. Several thousand truckers cross the border monthly. The area has approximately 500 resident sex workers, with about 200 part-time sex workers coming in from arid rural Masvingo and Matabeleland South at peak periods. District clinic staff members have received syndromic management training and have moderate supplies of STI drugs, but they see few truckers. Public and socially marketed condoms are generally obtainable. A targeted peer education program for sex workers is managed by a multisectoral district committee, with technical support from the KweKwe Town Council and the University of Zimbabwe in Harare and financial support from SIDA. The National Employment Council for the Transport Operating Industries (NECTOI) carried out a truckers' HIV/AIDS project from 1994 to 1996 under FHI's USAID-funded AIDS Control and Prevention (AIDSCAP) Project, but currently there are no interventions specifically for truckers. One-half or more of Beitbridge's antenatal patients are already infected with HIV.

Chirundu, Zimbabwe

This town has an estimated population of 2,700 to 4,000 residents. It is situated over 350 kilometers north of Harare, in Zimbabwe's Mashonaland West Province. The major sources of local employment are farming and fishing, with customs and immigration, the uniformed services and informal vending also playing a role. Every month several thousand truckers cross the border at Chirundu, and over 1,000 truckers sleep there. The area has approximately 100 resident sex workers, with another 200 part-time sex workers coming in from Kariba, Makuti, Karoi and rural Urungwe and Magunje at peak periods. District clinic staff members have received syndromic management training and have reasonable supplies of STI drugs, but they see few truckers. Public and socially marketed condoms are obtainable. A multisectoral district committee manages a targeted peer education program for sex workers, with technical support from the University of Zimbabwe Lake Kariba Research Station and the University of Zimbabwe in Harare and financial support from SIDA. The AIDSCAP/NECTOI project also covered Chirundu from 1994 to 1996, but currently there are no HIV/AIDS interventions specifically for truckers.

Chirundu, Zambia

With a population of 7,000 residents, Chirundu, Zambia, is also a relatively small site. It is situated over 140 kilometers south of Lusaka, in the poor, marginal Chiawa area of Zambia's Southern Province. The main local employment is with customs and immigration, the uniformed services, nearby banana farms and in informal trading. Every month several thousand truckers cross the border, and over 1,000 truckers sleep there. The area has approximately 300 resident sex workers, with another 200 part-time sex workers coming in from rural Chiawa at peak periods. The only hospital is Mtendere Catholic Mission Hospital, which is now taking increasing interest in STI/HIV work but serves few STI patients. Staff members have received training in STI syndromic management, but drug supply is erratic. Public and socially marketed condoms are in short supply. Mtendere Hospital has undertaken a small community peer education project in adjacent Siavonga District with support from Harvest Help, a rural community support NGO based in the United Kingdom.

Summary of data from the four border sites

Item	**Number**			
	Messina	**Beitbridge**	**Chirundu, Zimbabwe**	**Chirundu, Zambia**
Sex workers	400-700	500-700	100-300	300-500
Truckers staying overnight per month	3000	3000	1000	1000
People employed in urban	3700	1200	300	400

formal workplaces				
People employed in urban informal sector	450	1,400	200	700
Farm employees	4000	2600	200	2400
Youth in school	3500	2500	100	700
Youth out of school	4000	4500	700	3000
Hospitals	1	1	0	1
Clinics	2	2	1	2
Public condom outlets	4	3	2	3
Private condom outlets	4	4	1	2
HIV prevention activities				
STI care	Yes	Yes	Limited	Limited
Public condom distribution	Yes	Yes	Limited	Limited
Private condom distribution	Limited	Yes	Yes	Limited
Sex worker projects	Yes	Yes	Yes	Pending
Truckers projects	No	No	No	Pending
Urban workplace projects	Limited	No	No	No
Farm	No	Limited	No	No

projects				
Youth in school projects	Limited	Limited	Limited	Limited
Youth out of school projects	No	No	No	No

Conclusions and Recommendations

There is exceptional HIV vulnerability at each border post, with a sociocultural context of acute female poverty and male and female mobility, spearheaded by truckers and traders. Further interventions are urgently needed to complement past and existing work at the borders.

While sex workers are addressed at three of the sites and will soon be addressed in Chirundu, Zambia, there are other critical needs in HIV/AIDS prevention. A major gap is the lack of interventions for truckers. Such interventions are urgently needed, both at the borders and perhaps through major regional trucking companies in Johannesburg, Harare and Lusaka.

There is also great scope to address members of the permanent border communities, who may have sexual relationships with migrant populations. During the assessment, key informants repeatedly highlighted the links between permanent and migrant communities. They cited several forms of sexual relationships, but two topics received particular emphasis. One was the vulnerability of schoolgirls and other young women who have migrant partners for economic reasons. The second was the relationships that occur between men in formal employment at the borders -- including members of the uniformed services, border officials, miners and agricultural workers -- and HIV-vulnerable women, such as sex workers and female traders. There is thus a sound rationale for broadening interventions to reach key audiences among permanent residents at borders, particularly young women and men in formal employment.

A comprehensive prevention program is needed to create an enabling environment for lower HIV risk. Core services of such an approach include: strengthened STI services to reduce sexually transmitted infections; targeted interventions to protect truckers and their partners; workplace interventions to reduce HIV transmission in influential and economically strategic populations; youth interventions to prevent adolescents from contracting HIV; and condom social marketing and targeted communication interventions to promote and provide a supportive and reinforcing environment for behavior change.

STI care needs to be improved for both sex workers and clients at each of the borders. Innovative strategies involving both the public and private sectors may be required to reach truckers, who experience symptoms but do not use public health services at the borders. In contrast, sex workers have a large burden of asymptomatic STIs that will not be detected through standard syndromic approaches. It may be necessary to promote regular screening for sex workers and the use of special STI protocols, including additional diagnostics and risk assessment. It may also be worth exploring presumptive treatment approaches, at least initially.

Condoms are generally difficult to obtain, particularly in Chirundu, Zambia, and Messina, South Africa, and to a much lesser extent in the two Zimbabwean towns. There is great scope for increased condom social marketing, particularly in South Africa's Northern Province.

Finally, it is important to establish simple, effective project evaluation and quality assurance systems. A modified behavioral surveillance survey may be needed for outcome assessment.

Findings: Chirundu, Zambia

This town is situated on the Zambian side of the arid Zambezi Valley in Zambia's Southern Province, 142 kilometers south of Lusaka and 366 kilometers north of Harare. The Siavonga District Council office in Siavonga, 140 kilometers away, estimates that the population of Chirundu border post is 7,000.

Chirundu has an estimated 52 formal houses -- nearly all middle-income brick houses for customs, immigration, police and health officials -- and more than 1,000 informal houses, primarily in the two informal settlements, Gabon and ChiBhaghedi. Gabon has approximately 500 houses and ChiBhaghedi has about 250. There are a further 350 informal houses in the formal settlement. Dwellings in informal settlements are largely mud houses, although some are brick under thatch. Average house occupancy is about four. There are no recreational facilities, apart from taverns.

The largest sources of formal income in urban Chirundu -- freight, construction, retail, customs, domestic service, teaching, immigration and police -- employ more than 400 people. The largest sources of urban informal income are sex work, which supports about 500 people (including visiting sex workers), money changing, which supports about 120 people, and vending, which supports about 80 people. Most women in Chirundu rely primarily on vending and sex work for income.

Whereas much of the area around Chirundu town in Zimbabwe is set aside for wildlife, the rural areas surrounding Chirundu, Zambia, are used for commercial and subsistence agriculture. The farms outside Chirundu are large, employing more than 400 permanent workers and 2,000 seasonal workers.

Sources of formal income in Chirundu, Zambia

Economic activity	Number employed
Farming	440 permanent, 2000 seasonal
Freight handling/clearance	220
Construction by contractors	45 (on contract, hired as needed)
Customs	40
Hotels/shebeens/taverns/stations	40
Lodges	30
Nursing and hospital staff	25

Teaching	25
Army (support unit)	20
Police	10
Shops	10
Bank	10

Sex workers

Through careful observation, enumeration in guesthouses, bars and streets, and interviews with health workers and peer educators, the researchers estimated that Chirundu has about 300 permanent sex workers. Approximately 200 more transient sex workers visit Chirundu at peak periods, particularly at month's end, when the border is busiest. Sex workers seek clients primarily at hotels and taverns. There is no street sex work except on the main highway.

Sex workers' major clients are truckers, especially those who pay in foreign currency. Sex workers value South African clients, reporting that they pay up to US$20, which is over 10 times more than local men can pay. Competition for foreign clients is acute, however, and most sex workers remain poor, though perhaps less so than other women.

Trucking

The researchers enumerated 36 trucking companies using the Chirundu, Zambia, route. No trucking offices were identified at the border, probably because Chirundu is only two hours from Lusaka.

Trucking companies using the Chirundu, Zambia route

B&C Haulage	Built Elect	Car Delivery Services
Cargo Carriers	Cargo Connect Pvt Ltd	CARS
Colbro Transport	Conan Transport	Dunstan Transport
DZM Transport	GDC Transport	Henroy Transport
InterLink Carriers	John Bishop Transport	Joubert Transport
M & C Haulage	Maersk Transport	Mega Transport
Mhangura Transport	Minaar Transport	Modicraft Transport
Orinoco Enterprises	Quickfreight International	Rainbow Investments

Remmington Transport	Tanker Services	TM Haulage
Tranne Transport	TransHaul	Truck Africa
Trucking Rasteiro Brothers	Unitrans Transport	Western Transport
Wheels of Africa	Wheels of Africa, Harare	Whelson Transport

Seventy to 102 trucks were counted crossing the border on three random days. The number of trucks parking at the border on three random days ranged from 53 to 61.

Trucks crossing Chirundu, Zambia, border on three random days

Number crossing border	**24 Aug. 1999**	**27 Aug. 1999**	**30 Aug. 1999**
	70	102	80
Number parking at border	**19 Aug. 1999**	**24 Aug. 1999**	**29 Aug. 1999**
	57	61	53

Truckers' major southbound destination is South Africa, and their major northbound destinations are Lusaka, the Copperbelt and Congo. The Congo war has disrupted Congo's internal production and trade and increased its reliance on imports. Extensive troop, munitions and food movements to and from Congo have greatly increased trucking traffic at Chirundu.

The longest journeys are to Durban, Congo and Tanzania, which can take two weeks. Major goods transported are food, fuel, raw materials and machinery.

Days truckers spend away from home

Destination	**Days spent away**
Zimbabwe	3-5
Johannesburg	11-12

Truckers frequent four hotels and taverns in or near the town where they seek casual/commercial sex partners. In addition, truckers seek casual/commercial partners on the main highway and in the formal and informal settlements.

There are no guesthouses in Chirundu, and most truckers sleep in their cabins. At night, truckers park primarily at the customs bay, the tavern and along the roads.

Informal traders

Some Zambian women living in or passing through the Chirundu area rely upon informal trade, including cross-border trade, for survival. They export items for sale in Zimbabwe or import goods for sale in Zambia. Zimbabwean restrictions on the export of maize and Zambian restrictions on the import of Zimbabwean milk have affected the import trade.

The researchers counted from 78 to 135 informal traders crossing the border on three random days. The numbers of traders counted sleeping at the border was very low. Few women sleep there because Lusaka is only two hours from the border.

Informal traders crossing and sleeping at the Chirundu, Zambia border on three random days

Number crossing border	**13 Aug. 1999**	**15 Aug. 1999**	**22 Aug. 1999**
	125	78	135
Number sleeping at border	**15 Aug. 1999**	**17 Aug. 1999**	**19 Aug. 1999**
	2	3	6

Informal traders meet primarily in three market areas. One market is behind customs and the other is some distance away, further down the road. The third, a small market on the main road, is not a daily market and sometimes shifts to the bigger market.

Health services

Chirundu has one mission hospital and two small clinics. Mtendere Mission Hospital is situated just outside Chirundu town. It has 120 beds and about 40 outpatients daily, just three to four of whom are STI clients. Some staff members have received in-house training in STI management. Mtendere has better drug supplies than most Zambian institutions because of assistance from its Italian Catholic affiliation.

Kampali Clinic was originally built by Masstock Farm and is now run by the Zambian government with Irish aid. It has a clinical officer and a nurse who see about 40 outpatients daily, only one of whom typically has an STI. Most patients are from Masstock Farm.

Chiawa clinic is on the edge of Chiawa communal lands, where people displaced by the construction of Kariba Dam were resettled. Its catchment is the Jerry Gabin farm and Kabwadu village. It is bigger than Kapali clinic, with 12 beds and about ten outpatients daily. However, because it is less centrally located than Kapali, Chiawa serves fewer patients. It averages one STI client every few days.

Education

Chirundu's one school offers grades 1 through 9. Mandenga Basic School has 582 pupils (299 boys and 283 girls) in grades 1 through 7 and 150 pupils (82 boys and 68 girls) in grades 8 and 9. Fewer than 10 percent of children go beyond grade 9, travelling to Lusitu, Siavonga or Kafue to study.

NGOs in Chirundu, Zambia

Mtendere Mission Hospital is an NGO. It receives assistance from Harvest Help Zambia, an NGO with a branch office 140 kilometers away in the district capital of Siavonga and a headquarters 180 kilometers away in Munyama. The University of Zambia conducts several large research studies on rural development, health and HIV in central Chiawa, about an hour from Chirundu.

Condoms

In 1998, Mtendere Mission Hospital dispensed 1,300 unbranded government condoms and Kampali Clinic distributed another 1,600. A similar but unreported number of condoms was dispensed by Chiawa Clinic. Socially marketed Lovers Plus and Maximum condoms are available at Madhibha Bar and in the local market.

HIV/AIDS data

There has been no HIV serosurveillance in Chirundu, but hospital and clinic staff members confirm that HIV disease is widespread. Chirundu is believed to have one of the highest HIV prevalence levels in Zambia.

HIV/AIDS prevention activities

For its size, Chirundu has significant HIV/AIDS activities. This may be because of its proximity to Lusaka, the presence of a mission hospital, the research work done in Chiawa and the NGO work by Harvest Help elsewhere in Siavonga District.

Health workers use syndromic STI management, albeit without training. HIV counseling has been introduced at the hospital and, with support from NORAD, testing may be introduced. The hospital also supports a peer education project for low-income men and women. Public and socially marketed condoms are distributed on a very limited scale.

Risk Environment Profile: Chirundu, Zambia

Chirundu, Zambia, is very different from Chirundu, Zimbabwe, largely because of its proximity to Lusaka and the commercial and subsistence farms that surround it. In Zimbabwe, Chirundu is largely surrounded by state wildlife land, which is not inhabited by people.

While truckers are clearly central to HIV transmission in Chirundu, Zambia, there may also be a need to address commercial and subsistence agricultural workers near the town, particularly given the highly seasonal and thus migratory nature of their employment. Farming communities have a visible social impact on the social and sexual character of the town. There is acute rural poverty, which is expressed in

rural movement in and out of Chirundu town and in sex work and vending. Unlike those in Chirundu, Zimbabwe, sex workers in Chirundu, Zambia, come largely from areas near the border.

Chirundu has Zambia's most explicit commercial sex industry. Most sex workers live in two informal settlements, Gabon and ChiBhaghedhi, in mud and thatch houses owned by Lusaka entrepreneurs. Community members estimate that one in four women in these informal settlements is a sex worker. In addition, many mobile sex workers come in from rural Chiawa and as far afield as Lusaka and Siavonga.

In a context of rural poverty, girls as young as 12 are reported to engage in sex work. Older sex workers complained that younger rural girls would accept clients for as little as food or soap.

Sex workers in Chirundu reported finding clients primarily in hotels and taverns, though some also acknowledged going to parked trucks to seek clients. As elsewhere, truckers -- particularly South African drivers -- are the clients of choice. They are considered less mean and abusive than local clients. Moneychangers are also clients.

Many sex workers said they entered sex work when they became pregnant and were abandoned by their boyfriends and repudiated by their families. Nationwide, over 60 percent of Zambian women become pregnant or have a child by age 20. An increasing number of orphans are entering sex work, representing a vicious cycle of HIV illness and disease.

Sex workers said they preferred to use condoms, but until recently, condoms were hard to obtain in Chirundu. If condoms are unavailable, they have no choice but to accept unprotected sex. They also noted that Maximum and Lovers Plus are now sold at the market and motel.

The average age of truckers is 35, and most have been driving on the Chirundu route for five years or more. Many have steady girlfriends as well as sex-worker partners. Truckers are aware of the extent to which Chirundu is their creation. As one said: "If there were no truckers, there would be no huts here."

Although there are informal traders in Chirundu, many informants said that most vendors also practiced sex work.

Of all the sites analyzed, Chirundu, Zambia, represents the closest link between a highway and border site and an adjoining rural subsistence community. The site also has potentially greater resources (including the mission hospital) for addressing such a link, than the smaller, more isolated Chirundu, Zimbabwe.

Conclusions and Recommendations

There is exceptional HIV vulnerability at each of the four border posts, with a sociocultural context of casual and commercial sex and profound mobility, as truckers, traders, soldiers, migrant miners and itinerant sex workers move through the towns.

Further interventions are urgently needed to complement existing HIV/AIDS work at the borders. Sex worker peer education interventions are established at three border posts -- Messina, Beitbridge and Chirundu, Zimbabwe. However, there are profound needs and few other interventions at the borders.

Above all, there are few initiatives for truckers. The contribution of truckers to STI/HIV vulnerability at the borders has not been exaggerated. Trucking routes have totally altered the character of border towns. Several thousand truckers cross the major borders each month, and their incomes eclipse local resources. At some borders, the number of truckers crossing each month exceeds the stable adult population of the entire border site.

As noted before, both sex workers and truckers are important bridge populations in the sexual networks linking transient and residential communities. There is thus a need for interventions among residential communities linked to these and other bridge populations.

Three priority residential communities may be identified: young women, men in occupations other than trucking and low-income women at border posts. The HIV vulnerability of young women, including schoolgirls and young vendors, who seek an income from commercial or casual sex with truckers and other groups of older men with income is distressingly high. At each site, communities expressed concerns about young women, particularly schoolgirls. Men in occupations other than trucking visit sex workers and thus share the sexual networks of sex workers and truckers. And low-income women at the border posts may share sexual networks with sex workers and truckers through their own or their partners' sexual relationships. Beitbridge's antenatal HIV prevalence of approximately 50 percent illustrates how widely the virus is disseminated.

A number of priority interventions require greater emphasis: strengthening STI services; improving condom promotion and distribution; and supporting and reinforcing behavior change through targeted media and community mobilization. It will also be important to establish simple, effective project evaluation and quality assurance systems. A modified behavioral surveillance survey is needed to measure trends in HIV risk behavior over time.

Although STI care services are offered at each border, there are opportunities to strengthen services. At some borders, health workers need training in syndromic management and improvements in drug supply. Outreach and communication initiatives are also needed to promote appropriate STI care-seeking responses at all the border sites.

Innovative strategies are required to tailor STI care to meet the needs of the different priority groups identified in this assessment. For example, sex workers' STI needs will not be addressed by syndromic STI care alone because they have a large burden of asymptomatic infection, which standard syndromic approaches do not detect. Regular screening, with increased use of diagnostic tests or presumptive treatment, may be required. Truckers, in contrast, may have symptoms but may not seek care or may visit private or traditional providers, who may not necessarily cure them. Therefore, initiatives to improve private and traditional providers' STI care are important. It may also be worth taking STI care to truckers by establishing services at the sites and times they prefer. Others in primarily male occupational groups, such as soldiers, miners and farm workers, may face similar challenges and require similar responses. To reach youth -- particularly young girls -- adolescent-friendly reproductive health services are required.

All of these services will require intensive behavior change communication to generate demand. There are no targeted media or community mobilization initiatives at the border sites. Such initiatives could be used to promote an enabling environment for behavior change, condom use, and STI prevention and care-seeking because border sites are compact and it is easy to identify the sites and routes used by different target groups.

There is also scope for improving promotion and distribution of public and socially marketed condoms at all four border sites. Public sector distribution in South Africa and Zimbabwe occurs through health centers and sex worker peer educators. There is condom social marketing at Beitbridge and Chirundu in Zimbabwe, limited condom social marketing in Chirundu, Zambia, and almost no social marketing in Messina, South Africa. (Northern Province is not yet a focal province for South Africa's Society for Family Health.) Intensive social marketing, with particular emphasis on truckers, is needed.

The border sites may be divided into larger and smaller sites. The southern sites of Messina and Beitbridge are approximately four times larger than the northern sites, Chirundu, Zimbabwe, and Chirundu, Zambia. The southern sites -- particularly Messina -- have relatively diverse workplaces and several schools. The northern sites have few large workplaces and only one school each. Thus, a greater share of prevention resources is likely to be directed to the southern sites.

Appendix 1. Behavioral Survey Results

Behavioral surveys were completed among sex workers in three of the sites. Key survey data are summarized below for each site.

Percentage of sex workers reporting HIV-preventive and HIV-risk behaviors and STI symptoms in three border sites

Reported behavior or experience	Messina	Beitbridge	Chirundu, Zimbabwe
	% Yes	% Yes	% Yes
Attended peer education	35	40	55
Received condoms from peer	78	89	91
Have steady boyfriend	81	61	61
Used condom with boyfriend	42	73	86
Had casual partner	40	74	51
Used condom with last casual partner	36	44	65
Had regular client	39	87	63
Used condom with last regular client	38	41	72
Had non-regular client	N/A	89	53
Used condom with last non-regular client	N/A	89	70

Know STI symptoms	N/A	92	94
Seek care for STI symptoms	N/A	92	92
Had abdominal pains	N/A	20	35
Had discolored discharge	N/A	68	35
Had genital ulcer	N/A	14	34